printed many of his papers toward the end of the 18th century, I recently came on a little paper by Martin Vahl on a new species of *Patella*. Vahl was a Danish Naturalist who wrote chiefly on vertebrates, and after whom Mörch named the Greenland species of *Lymnæa*.

It is probable that he was also interested in botany, as he relates that he found his *Patella* (in the Linnean sense) on the blades of a species of the genus *Aponogeton* from the East Indies. He states that of the Linnean species of *Patella*, it is nearest to *P. fornicata* and *porcellana* (both now placed in the genus *Crepidula*).

His shell was of about the size of a grain of wheat, horny, fragile, smooth, with a reticulation of brown lines ; the apex short, blunt, basal and somewhat incurved; the base with a transverse horizontal lip less than a quarter of the basal length. The station of the shell in fresh waters on the blades of *Aponogeton* in the East Indies. The shell is not figured, but it seems certain that nothing but a species of the group called *Gundlachia* can correspond to this description, read in 1796, and published in 1798, in the fourth volume of the Skrivter, part 2, pp. 153–5. He called the species *Patella aponogetonis*. It was not until 1849 that Pfeiffer proposed the name *Gundlachia* for a Cuban species.

STUDIES IN NAJADES.

BY A. E. ORTMANN.

(*Continued from page 69.*)

CARUNCULINA PARVA (Barnes). (See Ortmann, 1912, p. 338.)

I received a number of specimens from Arkansas through H. E. Wheeler. Gravid females, with glochidia, were collected in the Ouachita River, Arkadelphia, Clark County, on May 19 and June 23, 1911. Among many specimens collected in Saline River, Benton, Saline County, on July 13, 1911, no gravid

females were present. The same was the case in specimens from Big Deceiper Creek, Gum Springs, Clark County, collected September 25, 1911. Of two gravid females collected in Malvern Creek, Malvern, Hot Springs County, June 10, 1912, one had eggs, the other glochidia. Another female, collected August 9, 1912, by A. A. Hinkley in Big Creek, Solitude, Posey County, Indiana, was gravid with eggs. As will be remembered, I found myself gravid females with eggs in Pennsylvania on June 17, 1909.

Thus eggs are known to occur on June 10, June 17 and August 9, while glochidia were present on May 19, June 10 and June 26. These records are rather confusing. It may be that the beginning of the breeding season is irregular (June to August), and that the glochidia are discharged in June, so that the end and beginning of the season overlap. But this should be studied more closely.

In the female the inner mantle-edge in front of the branchial has the following structure: First, immediately in front of the branchial, there is a group of four to six small papillae with black base and whitish tips; then follows a slightly lamellar expansion of the inner edge, which is right in front of those papillae thickened, so as to form the "caruncle." This caruncle may be white or brownish (chestnut), of various shapes, cylindro-conical, or pyramidal, or semi-globular, sometimes somewhat divided. In front of the caruncle the edge is slightly wavy and disappears soon. The group of small papillae, with their black base, form a more or less marked black spot, and sometimes this black color extends forward and backward, forward so as to enclose the base of the caruncle, backward along the base of the papillae of the branchial. Also in the male the group of small papillae is present and marked by a black spot, and in front of this the inner edge is slightly lamellar, but without a caruncle.

In most of the specimens recently investigated, the supraanal opening was not closed, but normal, separated from the anal by a mantle connection a little shorter than the supraanal, but as long as or slightly longer than the anal. But in one specimen from Malvern, a male, the supraanal is undoubtedly

closed, thus confirming my previous observation in Pennsylvanian specimens; but this character is apparently not constant.

Glochidia subovate, anterior, ventral, and posterior margins forming a rather regular curve. They are somewhat higher than long, but not quite so high as in Lea's figure (Obs. 13, 1874, pl. 21, f. 3). Length, 0.18; height, 0.20 mm.

(*To be continued.*)

NOTES.

HELIX HORTENSIS FROM A MAINE SHELL HEAP.—Dr. Glover M. Allen, in company with Mr. James F. Porter, while excavating in a shell heap on Great Spruce Head Island, Penobscot Bay, found *Helix hortensis* at a depth of from one to two feet below the surface, associated with bones of the large extinct mink—*Mustela macrodon* Prentiss. Although this mink has probably not been extinct for any great length of time, the association of the two forms is another evidence in support of the conclusion that the presence of *H. hortensis* in North America is in no way associated with its settlement by Europeans. Mr. Porter also found a fresh specimem of *H. hortensis* near Duck Harbor, Isle au Haute, Me., a new locality for the species. —C. W. JOHNSON.

CÆCILIOIDES GUNDLACHI (PFR.) IN FLORIDA :—In March, 1914 Mr. John B. Henderson sent me two bags of dirt gathered on the south bank of the Miami River about two miles above Miami, and in it I found four specimens of the above species. This may be the species collected by Bartlett in Florida many years ago and called "*C. acicula*" by Binney ; Manual, p. 429, as *acicula* has never been found there by recent collectors. Pilsbry, Manual of Conchology, second series, Vol. XX, p. 43, states that the shells found by A. D. Brown at Princeton N. J., "no doubt imported with West Indian plants," are *gundlachi* although Binney recorded them in the Manual as *acicula*. —GEO. H. CLAPP.